

Remarks

Claims 1, 2 and 24 are amended herewith. Claim 3 is cancelled. Claims 24 and 25 were previously amended. Therefore, claims 1, 2, and 4-25 are currently pending.

Claim 1 now covers:

A process for separation or concentration of at least one neutral or charged organic compound in a feed solution, said process comprising the steps of:

- passing at least once a feed solution containing neutral and charged organic compounds through an electrodialysis cell under electrical field with pH of said feed solution being adjusted to preserve the charges of said compounds, said electrodialysis cell comprising at least one charged membrane, and at least one filtration membrane having a pore size greater than 100 Daltons, said cell being operated with no pressure differential between the cell compartments; and*
- collecting separated fractions of permeate after passage of said neutral or charged compounds through said filtration membrane, each separated fraction containing separately neutral or charged compounds,*

wherein an ionic solution circulates between said charged membrane and said filtration membrane on the side of the filtration membrane opposed to the side on which circulates the charged compounds containing feed solution, the charged compounds passing through said filtration membrane in the ionic solution during passage in the electrodialysis cell, and neutral compounds remaining in the feed solution.

Claims objections

Claims 24 and 25 were objected to for failing to indicate their status. Claims 24 have now been clearly identified as "previously amended", and "currently amended" as the case may be. Applicant apologizes for this oversight.

Claims rejections

In the Office action of April 12, 2011, the Examiner rejects the claims as being obvious based on Jain US 4,322,275 in view of Tye US 3,046,211. Applicant understands that the Examiner is construing Jain to teach that the neutral membrane presented at column 6, lines 22 to 32 of this document is equivalent to the presently claimed filtration membrane. With respect, Applicant disagrees.

The Examiner will find enclosed a CFR 1.132 Declaration from Dr Laurent Bazinet, one of the co-inventor of the application explaining that Jain does not teach that at all. Dr Bazinet explains that what Jain teaches is *good old* standard electrodialysis that proceeds by reaching the isoelectric point of proteins with salting-in and salting-out phenomena, thereby inducing precipitation of proteins by the eventual loss of their charge. The presently claimed invention intends to preserve the protein's charge (re: with pH of said feed solution being adjusted to preserve the charges of said compounds) and avoid precipitation otherwise separation by electrodialysis would fail. The separation disclosed by Jain is carried out by coupled electrodialysis with a chemical pH adjustment to reach the isoelectric point of

the proteins, without further adjustment to maintain that pH during electro dialysis, and consequently to precipitate them. The resulting uncharged proteins can not migrate under the influence of an electric field, contrary to the purposes of the presently claimed invention.

With respect to the neutral membrane, the Bazinet Declaration explains that there is no transfer of proteins through membrane in the Jain procedure, and that the neutral membrane of Jain is not a filtration membrane with a specific molecular weight cut-off as is the case here. The essentially electrically neutral membrane as stated in Jain does not permit the migration of peptidic molecules and does not have pores and is therefore "non-porous". Such neutral membrane is sometimes called «porous» inasmuch as it is «loose» or rather not totally water-tight, but it does not allow the migration of peptides or proteins.

Finally, Dr. Bazinet states that it was unexpected to use of a filtration membrane within an electro dialysis cell since these types of membranes were broadly thought by persons skilled in the art to be too "electrically-resistant" to allow the passing of charged molecules to be separated. This present evidence that the presently claimed process provides surprising results in view of what one skilled in the art would expect. For those reasons, the application of Jain to support the obviousness rejection must fail.

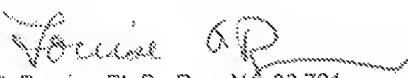
In view of the foregoing, reconsideration of the rejections and objections of the claim is respectfully requested. It is believed that the claim is allowable over the prior art, and a Notice of Allowance is earnestly solicited.

In the event that there are any questions concerning this amendment or the application in general, the Examiner is respectfully urged to telephone the undersigned so that prosecution of this application may be expedited.

No fees are believed to be required by the present response. However, should this be an error, authorization is hereby given to charge deposit account 19-5113 for any underpayment or to credit any overpayment.

Respectfully submitted,

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Enclosures: - Declaration under 37 CFR 1.132 of Laurent Bazinet + c.v.
- IDS and 1 non-patent reference